EXHIBIT P

Limited Permission to Disclose Agreement ("Agreement")

E. I. DuPont de Nemours and Company ("Company") desires to allow the **United States Environmental Protection Agency ("USEPA") / Office of Pollution Prevention and Toxics ("OPPT")** to share certain data and insights relating to Premanufacture Notification ("PMN") substances **P-08-508** and **P-08-509** with the **West Virginia Department of Environmental Protection ("WVDEP")** and the **West Virginia Department of Health and Human Resources ("WVDHHR")** for the purpose of facilitating WVDEP's and WVDHHR's review of the PMN substances for environmental permitting purposes.

Accordingly, by signing below, DuPont authorizes USEPA/OPPT to disclose only the following information to the staff of the WVDEP and the WVDHHR solely for the purpose of facilitating their review of the PMN substances for environmental permitting purposes:

- Copies of any information provided by DuPont to USEPA/OPPT pertaining to PMN substances P-08-508 and P-08-509

- Evaluation reports or other materials produced by USEPA/OPPT pertaining to PMN substances P-08-508 and P-08-509

PMN file:

- Non-confidential chemical identities: Perfluorinated Aliphatic Carboxylic Acid and Perfluorinated Aliphatic Carboxylic Acid, Ammonium Salt

- USEPA/OPPT file numbers: P-08-508 and P-08-509
- Date PMNs received by the USEPA: June 30, 2008

DuPont and USEPA/OPPT acknowledge and agree to the following with respect to this limited permission to disclose:

1. The permission authorized is a limited one. The permission is provided solely to facilitate the review of the PMN substances by the WVDEP and WVDHHR for environmental permitting purposes. USEPA/OPPT agrees to disclose only the information described above.

2. DuPont authorizes the USEPA/OPPT PMN review team to robustly discuss all information in the PMN files in a conference call between the USEPA/OPPT PMN review team personnel, WVDEP personnel, and WVDHHR personnel at a date and time to be determined.

3. This permission is not, therefore, a general waiver of either substantive or procedural confidential business information (CBI) protections under applicable law.

4. DuPont recognizes that the USEPA/OPPT makes no representation as to the level of security or the procedural or substantive rights that information might be afforded once the information is disclosed to WVDEP and WVDHHR.

5. USEPA/OPPT will, however, inform the participating WVDEP and WVDHHR personnel of the existence of any information claimed as confidential or proprietary by DuPont and treated as confidential by the USEPA/OPPT, at the time of disclosure.

6. DuPont, furthermore, makes this limited disclosure with the understanding and belief that WVDEP and WVDHHR will give any information claimed as confidential or proprietary by DuPont and treated as confidential by the USEPA/OPPT all protections to which it is entitled under applicable laws.

7. DuPont acknowledges that there may be materials in the USEPA/OPPT PMN files that may not be shared with WVDEP and WVDHHR. If this situation occurs, USEPA/OPPT will advise WVDEP, WVDHHR, and DuPont what, if any, materials were withheld and why.

8. DuPont furthermore authorizes the transmission of data electronically (e-mail, telephone and/or fax) to WVDEP and WVDHHR for expediting the sharing of information related to the PMN substances. DuPont further authorizes USEPA/OPPT to discuss material in the PMN files with WVDEP and WVDHHR solely for the purpose set forth above.

Agreed and Accepted:

United States Environmental Protection Agency
Office of Pollution Prevention and Toxics

Greg Schweer

Name: Greg Schweer

Date: 12/15/2009

Agreed and Accepted:

E. I DuPont de Nemours and Company

James R. Hoover

Name: James R. Hoover

Date: December 10, 2009

EXHIBIT Q

From: Jenny Liu

Sent: Friday, July 23, 2010 1:34 AM

To: Andrew S Hartten; David W Boothe; Fred C Dawson; Gregory W Smith; holtrf1@comcast.net; James R Hoover; John M Schofield; L William Buxton; Leo J Hyde; michaelmccabe1@earthlink.net; Minori Hagiwara; Nancy S Selzer; Paul J DiAntonio; Robert C Buck; Robert W Rickard; Ronald P Bock; T C Feng; Andrea V Malinowski; Eric A van_Wely; Kathleen A Shelton; Yolande Peeters; Jorge Dieguez; Akito Abe; Gloria Xu; John Qiang Zhao; Chun Ku Chen; Kenny Jeng; Tency N L Du; Carol Ke Wen Chen; Barry M Granger; Linda A Strachan; Gregory W Smith; Michael S Parr; Chris Caldwell; Rick M Deadwyler; Jeff Fritz; cindy.goldstein@pioneer.com; billi.hunt@pioneer.com; sarah.thorn@pioneer.com; Warren E Mayberry; erin.spencer@pioneer.com; thomas.r.jacob@gmail.com

Cc: Janet E Smith; Dawn R Werry; Janice L Connell; John W Moriarty; Kirsten E Myers; Laura A Korte; Martha L Rees; Mary Erin Mariani; Pascal Ferrandez; Paul D Berg; Paul N Costello; Wayne M Lednar; Thomas H Samples; Frenk Hulsebosch; Stephen Rahaim; Maria S Angelo; Patricia McGee; Ann K Masse; Diane Norvell

Subject: PFOA Overview

Attach: PFOA Overview 2010-07-22.pdf

Global R/G team and GA managers,

Attached is a "backgrounder" on PFOA that is intended as a leave-behind for use with regulatory and government audiences. This would generally be handed out in the context of a face-to-face meeting. It is 2 double-sided pages in length. Many thanks to Janet for her help on this. Please call me if you have any questions regarding its content or use.

Best regards,
Jenny

Office: 302-999-3628
Cell: 518-469-7663

PFOA Overview

PFOA (perfluorooctanoic acid) is a persistent chemical present at very low levels in the environment and the blood of the general population. A number of global manufacturers, including DuPont, make and use PFOA. PFOA is a polymerization processing aid used to produce some high-performance fluoropolymer materials. While PFOA is not used to make fluorotelomers, it is found at very low trace levels in some fluorotelomer products as a byproduct of their synthesis.

Current DuPont fluoropolymer and fluorotelomer products which may contain low levels of PFOA are safe for their intended uses and offer significant benefits. Our studies indicate that any PFOA present in consumer products made with DuPont materials is at extremely low trace levels. Use of these products does not result in measurable quantities of PFOA in the blood of consumers. More information is available at www.pfoa.dupont.com.

DuPont Phase-out Commitment: In response to questions about PFOA in the blood of the general population, and customer interest in product alternatives, DuPont has made a commitment to no longer make, buy or use PFOA by 2015, or earlier if possible. We have developed new products and processes that are more environmentally sustainable.

EPA 2010/15 PFOA Stewardship Program: DuPont is one of eight major manufacturers participating in the U.S. Environmental Protection Agency (EPA) 2010/15 PFOA Stewardship Program, which was announced in January 2006. DuPont is on track to meet or exceed the 2010 program goal of 95% reduction in emissions and product content. In fact, we have reduced our worldwide manufacturing PFOA emissions by 98%. The U.S. Centers for Disease Control and Prevention (CDC) has reported a 25% reduction in PFOA serum concentrations. EPA attributes these reductions to industry and Agency efforts.

Environment: PFOA has been made and used for more than 50 years. The total amount of PFOA made and used is not large compared to most industrial chemicals. In recent decades, analytical methods have improved so that they can now detect substances at extremely low trace levels (parts per trillion). Data generated through the use of advanced analytical methods show that very low levels of PFOA are present and fairly widespread in the environment.

Human Health: Based on extensive health and toxicological studies, DuPont believes that PFOA exposure does not pose a health risk to the general public. Human studies have evaluated many health endpoints across a wide range of exposed populations. While some associations have been reported, no human health effects are known to be caused by PFOA. A considerable number of human health studies are ongoing, and results will be available over the next several years.

PFOA has been extensively studied in an occupational setting where potential exposure can be significantly higher than in the general population. DuPont continues to take steps to better understand and minimize exposure to PFOA in our global facilities. Our comprehensive industrial hygiene program has helped our sites improve their industrial hygiene practices and engineering controls.

Fluoropolymers

Fluoropolymers such as polytetrafluoroethylene (PTFE) are high molecular weight polymers with inherent properties that cannot be achieved with any other known substances. They have high thermal stability, low friction, and excellent electrical insulation properties, and are non-flammable and resistant to chemical attack. Certain fluoropolymers are manufactured using PFOA as a processing aid. PFOA is neither reacted with nor incorporated into the fluoropolymer. A variety of processes, including high heat treatment, are used to reduce PFOA content to trace levels in final products.

Fluoropolymer-based products play a critical role in many applications. These range from providing cable and internet service, generating clean and renewable energy, and manufacturing more efficient and reliable vehicles, to designing safe and high performance buildings and aircraft, and building lightweight and affordable laptops, cell phones, media players and home theaters.

New DuPont™ GenX Technology

DuPont has developed patented technology that enables us to make high-performance fluoropolymer resins without the use of PFOA. This includes a new-generation processing aid with a favorable toxicological profile and very rapid bioelimination, combined with unique environmental exposure control technologies that reduce the potential for environmental release and exposure.

The new processing aid is chemically stable and, if released, would be environmentally persistent. To address this, DuPont has established a GenX exposure control strategy with the goal of containing the new processing aid within the manufacturing site and minimizing worker exposures. We expect to operate with 99 percent or greater overall environmental control efficiency with the GenX processing aid, and to demonstrate that extractable residual processing aid content in fluoropolymer resins is less than 200 parts per billion (ppb). This information is available at www.genx.dupont.com.

We began in 2009 to convert customers to the use of fluoropolymers made with our alternative technology, which enables DuPont and our customers to continue to provide high performance fluoropolymer-based products that meet exacting end-use requirements.

Fluorotelomers
PFOA is not used to make fluorotelomers. However, it may be found at very low trace levels in some fluorotelomer products as a byproduct of their synthesis.

Fluorotelomers are raw materials used to produce surface protection products, including repellents and surfactants, for a wide range of applications in home furnishings, textiles, paper, fire-fighting foam, nonwovens, coatings, and stone and tile protection. The unique performance of fluorotelomer products brings consumers many benefits, which include ease of care, reduced maintenance, and extended life for a broad range of articles used every day.

New Capstone® Short-Chain Repellent and Surfactant Products
DuPont has developed a new line of surface protection products based on sustainable short-chain technology (six or less fluorinated carbons) that deliver superior performance, supported by extensive environmental, health and safety testing. Capstone® repellent and surfactant products are based on short-chains that cannot break down into PFOA or PFOS (perfluorooctane sulfonate) in the environment, and they are manufactured using patented technology to minimize the presence of residual unreacted raw materials and by-products.

Extensive studies show that DuPont™ Capstone® repellent and surfactant products, raw materials such as short-chain alcohol, and potential degradation products including perfluorohexanoic acid (PFHxA) have a favorable environmental, health and safety profile, rapid bio-elimination, and are not bioaccumulative. This knowledge foundation is a comprehensive body of environmental, health and safety data show that Capstone® repellent and surfactant products are safe for workers, consumers and the environment when used as intended. This information is available at www.capstone.dupont.com.

PFHxA, a degradation product that may be formed at low concentrations, is a persistent substance in the environment. However, PFHxA has rapid bio-elimination, low toxicity, and it is not bioaccumulative. Published, peer-reviewed scientific studies have concluded that perfluorinated carboxylic acids (PFCAs) with less than eight total carbons, including PFHxA, are not bioaccumulative according to global regulatory criteria.

DuPont™ Capstone® repellent and surfactant products are used commercially as repellent s in home furnishings, paper packaging, textiles, stone and tile, and leather end uses and used as surfactants is fire-fighting foams and coatings. Capstone® repellent and surfactant products perform as well as, or better than, the products they replace.

Regulatory Activities - PFOA

- There are no restrictions on manufacture or use of PFOA and its salts anywhere worldwide.
- No authoritative body[1] has classified PFOA as a human carcinogen or human reproductive toxicant.
- PFOA is not a P-B-T (Persistent, Bioaccumulative and Toxic) compound nor does it meet the REACH vPvB (very Persistent, very Bioaccumulative) criteria. Although PFOA is environmentally persistent and moderately toxic, it is not bioaccumulative according to global regulatory criteria.
- Drinking water values have been established in the US and other countries to establish levels below which consumption is presumed safe, some for lifetime exposure.
- Tolerable Daily Intake levels have been established by the UK and the European Food Safety Authority.
- These regulatory positions and decisions have been informed by a considerable body of science on PFOA that numbers more than 300 toxicology and health related studies and a significant body of human epidemiology data.

22 July 2010

[1] as defined in California's Proposition 65 listing criteria

EXHIBIT R

Meeting with North Carolina Division of Water Quality and Division of Waste Management

August 26, 2010

DUPONT

The miracles of science™

Objectives

Provide update on DuPont progress on U.S. EPA 2010/15 PFOA Stewardship Program commitment

Share information on GenX processing aid technology

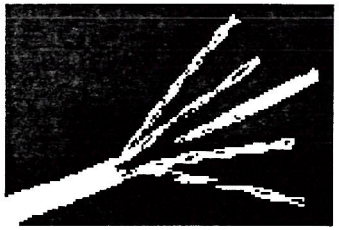
Establish a dialogue with NCDENR regarding the use of GenX technology at DuPont Fayetteville Works

Introduction

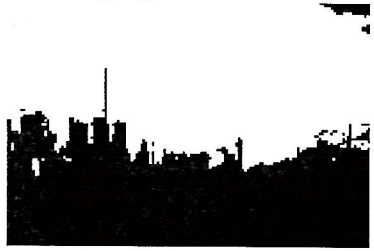
DuPont has achieved a significant milestone in meeting our commitment to no longer make, buy or use perfluorooctanoic acid (PFOA) by 2015, or earlier if possible.

We have developed patented technology for a new-generation processing aid that enables us to make high-performance fluoropolymers without the use of PFOA.

Fluoropolymer Applications – Resins & Dispersions

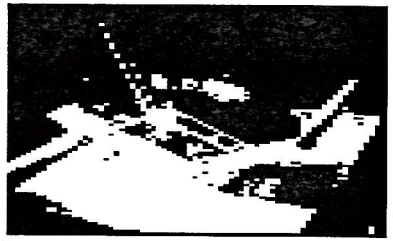


Computer
Network cable



Chemical Industry

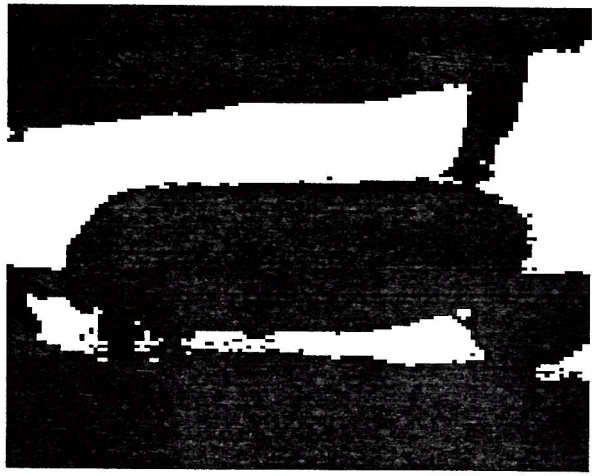
Apparel



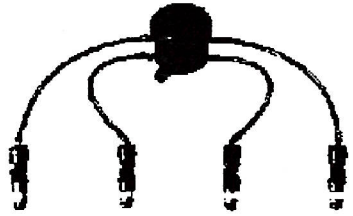
Semiconductor Manufacture

Mobile communications

Cookware



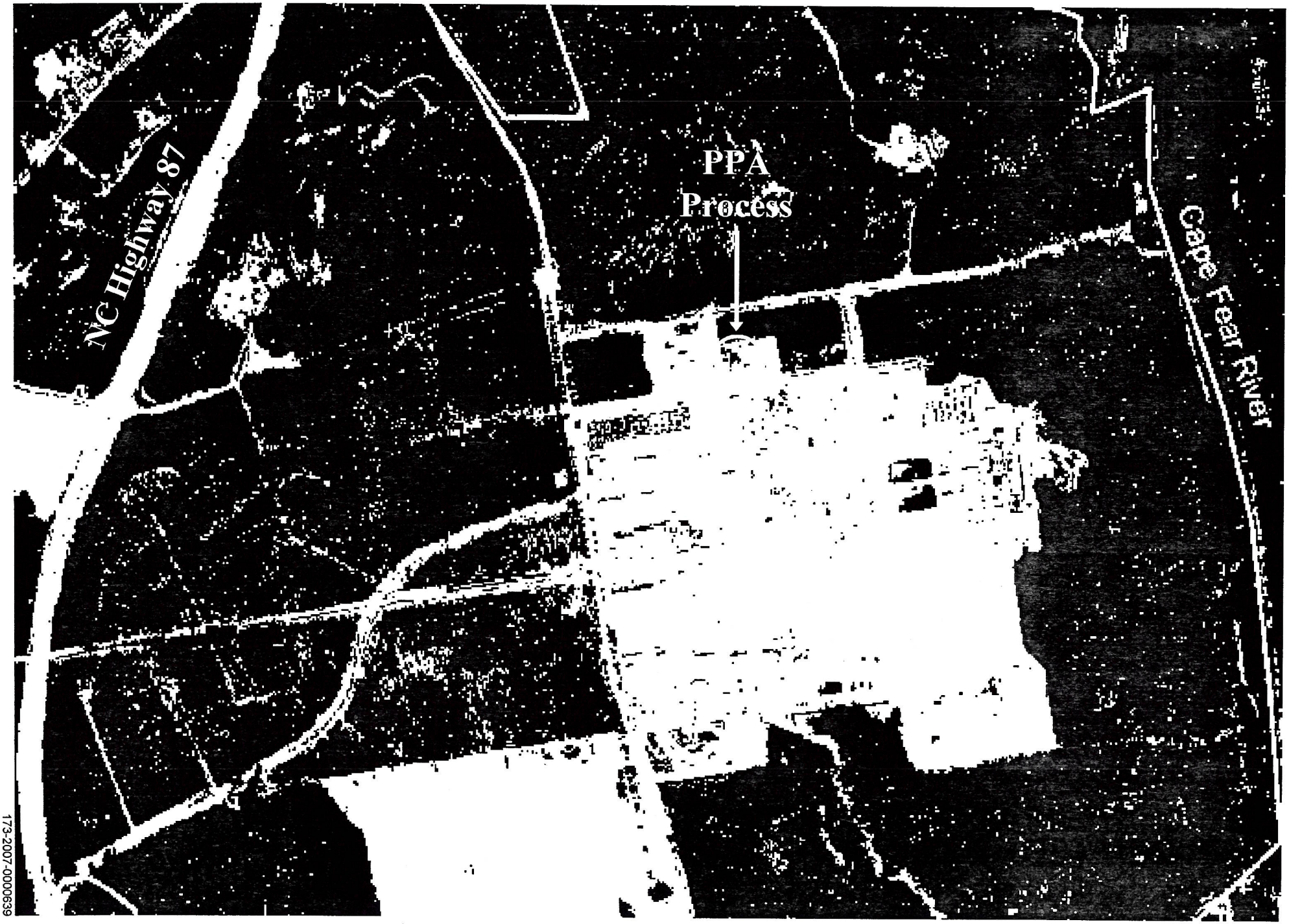
Aerospace Materials



Automotive
Oxygen sensor
(Automotive material)

Architectural Fabrics

DuPont Fayetteville Works



PFOA Stewardship Update

The miracles of science™

August 26, 2010

PFOA Overview

- **PFOA is a polymerization processing aid used to produce some high-performance fluoropolymer materials. It is also called APFO or C-8.**
  - While PFOA is not used to make fluorotelomers, it is found at very low trace levels in some fluorotelomer products as an unintended byproduct of their synthesis.
- **DuPont is one of a number of global manufacturers that make and use PFOA.**
- **PFOA is persistent in the environment and has been detected at very low levels (average 5 ppb) in the blood of the general population.**
- **PFOA has been extensively studied (animal toxicology, human epidemiology, environmental).**
- **There is no nationally established "acceptable level of exposure" in the United States.**
- **North Carolina has established an interim maximum allowable concentration of 2 ppb in groundwater.**

PFOA Overview

- Presence of PFOA in people's blood raises questions which are being addressed by industry. For example:
  - Reducing emissions and product content (US EPA 2010/15 PFOA Stewardship Program and others).
  - Commercializing next generation products.
  - DuPont committed to no longer make, buy or use by 2015, or earlier if possible.
- Based on extensive health and toxicological studies, DuPont believes PFOA exposure does not pose a health risk to the general public.
- Current DuPont fluoropolymer and fluorotelomer products which may contain low levels of PFOA are safe for intended uses and offer significant and unique benefits to society.

PFOA Stewardship

U.S. EPA 2010/15 PFOA Stewardship Program

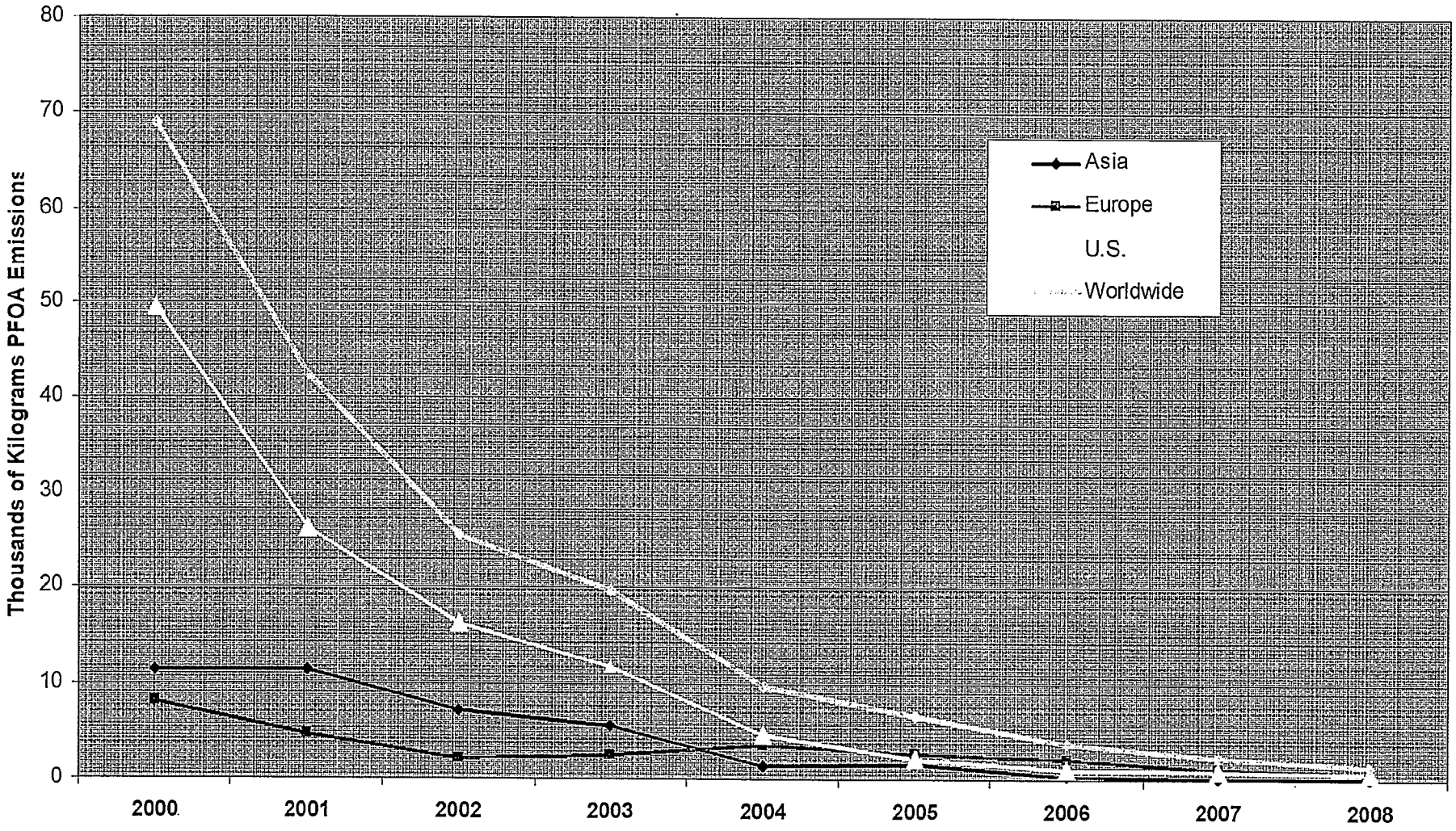
- **By 2010, 95% global reduction in emissions and product content**
  - Fluoropolymer and Fluorotelomer products
  - PFOA, precursors, higher homologues
- **Work toward elimination by 2015**
- **DuPont and seven other major international companies**
- **Program was launched in Jan. 2006, using a base year of 2000**

DuPont Commitment

"...today we are committing to <u>eliminate the need to make, buy or use PFOA by 2015</u>.... We are encouraged and pleased that our progress to date has been so promising. As a result, we will intensify our efforts by doubling our R&D investment."

DuPont Chairman and CEO Chad Holliday, Feb. 5, 2007

DuPont Global PFOA Emissions



August 26, 2010

PFOA Stewardship

Why did DuPont make the 2015 PFOA Commitment?

- **To respond customers and regulators, who want us to move in this direction.**
- **To address the concerns of global stakeholders, who expect DuPont to use science to create solutions.**
- **To align with our Biopersistent Materials Principles.**

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www.pfoa.dupont.com

EXHIBIT S

MATERIAL SAFETY DATA SHEET

NAME OF PRODUCT: HFPO Dimer Acid
MSDS DATE: 03 October 2005

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: HFPO Dimer Acid
SYNONYMS: 2,3,3,3-Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
PRODUCT CODES:

MANUFACTURER: DuPont Fayetteville R&D Laboratory
DIVISION: Nafion™
ADDRESS: Highway 87 North
Fayetteville, NC 28306

EMERGENCY PHONE: 302-999-4658 (William Buxton)
OTHER CALLS: 910-678-1198 (Lee Sprague)

CHEMICAL NAME: 2,3,3,3-Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
CHEMICAL FAMILY: Fluorinated organic Acid
CHEMICAL FORMULA: $C_6HF_{11}O_3$

PRODUCT USE: Experimental Polymerizations
PREPARED BY: Lee Sprague

SECTION 2: COMPOSITION/INFORMATION ON INGREDIANTS

CAS No.: 13252-13-6
SARA 313 REPORTBLE: Not reportable

AEL-Dupont PEL-TWA: 1.0 ppm (based on parent acid fluoride)
OSHA PEL STEL: not established
OSHA PEL CEILING: not established

ACGIH TIV-TWA: not established
ACGIH TI V STEL: not established
ACGIH TLV CEILING: not established

SECTION 2 NOTES:
Inhalation toxicity for acid has not been measured. Values above are for acid fluoride. This is most likely a more severe (more toxic) value.

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

ROUTES OF ENTRY: INGESTION

POTENIAL HEALTH EFFECTS
EYES: May cause eye corrosion or ulceration-blindness may result

SKIN: Untested. May cause skin corrosion or ulceration.

INGESTION: Immediate effects may include severe irritation of the digestive track with stomach pain. Delayed effects may include vomiting, effects to liver and kidneys.

INHALATION: May cause pulmonary edema. Vapor pressure believed to be considerably below value that could cause acute
Injury.

ACUTE HEALTH HAZARDS: See above for effects.

CHRONIC HEALTH HAZARDS: Liver enlargement by actual tests. Acute effects Haskell MR697, Report 2.63

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Unknown

CARCINOGENICITY
OSHA: ACGIH: NTP: IARC: OTHER:

SECTION 3 NOTES: No data available for this section

SECTION 4: FIRST AID MEASURES

EYES: Immediately flush eyes with large quantity of water for five minutes while holding eyelids apart. Trained personnel should apply 1% calcium gluconate (no stronger) by continuous drip. A trained ophthalmologist should be consulted. Sample prepared has had most of fluoride ion removed in synthesis. Severe eye injury from fluoride ion attack unlikely. Typical expected contact with material not containing fluoride ion would be irritation.

SKIN: In case of contact, Immediately flush with plenty of water *for* at least 15 minutes while removing contaminated clothing. Wash or dispose of contaminated clothing.

INGESTION: If swallowed, Immediately give two glasses of water and induce vomiting. Never give anything by mouth to an unconscious person. Call a physician.

INHALATION: Inhalation due to vapor pressure unlikely. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS:

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLE LIMITS IN AIR: Not Flammable
FLASH POINT: Untested. Greater than 100C by analogy to similar compounds
METHOD USED:

AUTOIGNITION TEMPERATURE: Not tested

NFPA HAZARD CLASSIFICATION
HEALTH: 2 FLAMMABILITY: 0 REACTIVITY: 1 OTHER:

EXTINGUISHING MEDIA: N/A

SPECIAL FIRE FIGHTING PROCEDURES: Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None other than decomposition products listed below.

HAZARDOUS DECOMPOSITION PRODUCTS: Will produce vapors of ammonia, HF and acid fluorides by analogy (not actually tested)

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: Evacuate personnel, thoroughly ventilate area,. Use self contained breathing apparatus.

SECTION 7: HANDLING & STORAGE

HANDLING AND STORAGE: Avoid breathing vapor or mist. Avoid breathing dust. Avoid contact with eyes
OTHER PRECAUTIONS: Keep away from areas where product may come into contact with food or pharmaceuticals. Keep container closed when not in use

SECTION 9: PHYSICAL & CHEMICAL PROPERTIES

APPEARANCE:	Clear to slightly opaque
ODOR:	None
PHYSICAL STATE:	Liquid
pH:	Very acidic, soluble in water.
BOILING POINT:	85-87C @ 38mmHg 185-189F @ 38mmHg
MELTING POINT:	Not known
FREEZING POINT:	Not known

VAPOR PRESSURE (mmHg):	1.3mmHg @ 25C (calculated)
SOLUBILITY IN WATER:	Partially soluble
PERCENT VOLATILE COMPOUNDS:	100%
MOLECULAR WEIGHT:	330

SECTION 10: STABILITY AND REACTIVITY

STABLE: Yes UNSTABLE:

CONDITIONS TO AVOID (STABILITY):

INCOMPATIBILITY (MATERIAL TO AVOID): Will react with strong bases with generation of heat.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: HF on combustion. Acid fluoride organics on Incomplete combustion.

HAZARDOUS POLYMERIZATION: Will not polymerize

CONDTIONS TO AVOID (POLYMERIZATION): no conditions

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION: This material in doses of 5000 mg/kg in a single dose has been shown to cause chronic liver enlargement. Doses in excess of 7400 mg/kg are lethal to test animals.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL Information: This product can potentially generate HFPO acid anion, either through dissociation or metabolism, which has the potential to resist degradation and persist in the environment

SECTION 13: DISPOSAL CONSIDERATIONS:

WASTE DISPOSAL METHOD: Incineration with a scrubber equipped discharge

RCRA HAZARD CLASS: Not regulated by RCRA.

SECTION 13 NOTES: Dispose of by Incineration with a scrubber following combustion chamber.

SECTION 14: TRANSPORT INFORMATION:

U.S. DEPARTMENT OF TRANSPORTATION PROPER SHIPPING NAME:
HAZARD CLASS:

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS
TSCA (TOXIC SUBSTANCE CONTROL ACT): this material is not listed on the TSCA Inventory. Material is to be used for R&D purposes only.

313 REPORTABLE INGREDIENTS:	None
STATE REGULATIONS:	None
INTERNATIONAL REGULATIONS:	None

SECTION 16: OTHER INFORMATION:

PREPARATION INFORMATION: MSDS prepared by L. Sprague, Fluoroproducts R&D, Telephone No. 910-678-1198.

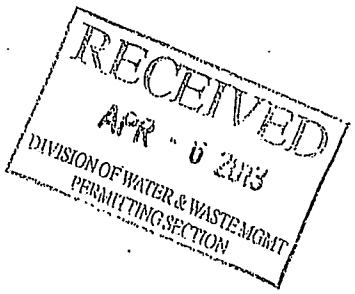
EXHIBIT T

SPILMAN THOMAS & BATTLE, PLLC

ATTORNEYS AT LAW

M. Ann Bradley
304-340-3882
abradley@spilmanlaw.com

April 5, 2013



Lawrence P. Sirinek, Ph.D.
West Virginia Department of Environmental Protection
131 A Peninsula Street
Wheeling, WV 26003

Re: Rat Oral Gavage Study

Dear Dr. Sirinek:

Enclosed is a copy of a recently completed rat study that I discussed with you earlier this week which I am forwarding on behalf of DuPont. I have also enclosed a cover letter submitted by DuPont to USEPA summarizing the study. We look forward to discussing the study with you further at our meeting currently tentatively scheduled for May 7, 2013. In the meantime if you have any questions concerning the study, please let me know. We would be pleased to arrange a call with DuPont toxicologists if you believe that would be helpful in your review.

Very truly yours,

M. Ann Bradley by Cate Dennis

M. Ann Bradley

MAB:cb2-4703647
Enclosure
cc: Scott G. Mandirola (w/ attachments)

ORIGINAL

TSCA NON-CONFIDENTIAL BUSINESS INFORMATION

DOCUMENT DESCRIPTION	DOCUMENT CONTROL NUMBER	DATE RECEIVED
8EHQ-06-16478	89130000232	1/9/13

COMMENTS: 8EFU

DOES NOT CONTAIN CBI

MR#350977

DuPont Haskell Global Centers
for Health and Environmental Sciences
1090 Elkton Road, P.O. Box 50
Newark, DE 19714-0050

January 8, 2013

Via Federal Express

Document Processing Center (Mail Code 7407M)
Room 6428
Attention: 8(e) Coordinator
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency
1201 Constitution Ave., NW
Washington, DC 20004

Dear 8(e) Coordinator:

8EHQ-06-16436/8EHQ-06-16478
2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, ammonium salt
CAS # 62037-80-3

This letter is to inform you of the preliminary results of a 2 year rat oral gavage study with the above referenced test substance. This test substance is subject to a Consent Order, P-08-509.

A 2-year oral gavage study was conducted in Crl:CD(SD) rats (80/sex/concentration) with the test substance at doses of 0, 0.1 (males only), 1, 50, and 500 (females only) mg/kg bw/day. The rats were evaluated for mortality, clinical signs, body weight and weight gain, food consumption, and food efficiency, and received an ophthalmology examination pretest and after 1 and 2 years of dosing. Ten rats/sex/dose were designated for evaluation of chronic toxicity. These rats were evaluated for clinical pathology at 3, 6, and 12 months, and for anatomic pathology (organ weights, gross and microscopic pathology) at the end of 12 months. The remaining rats (70 rats/sex/dose; main study rats) were dosed for up to 23 (females) or 24 (males) months. Females were sacrificed at week 100 due to poor overall survival, although survival was comparable among all dose groups. Clinical pathology (WBC differential counts) was evaluated at 12, 18, and 24 months in all surviving main study rats. All animals received a gross pathology evaluation at necropsy, and organ weights were collected in animals surviving to terminal sacrifice. Microscopic examination of tissues was conducted in animals that survived to scheduled sacrifice (12 month and end of study), and in all animals that died prior to scheduled sacrifice.

No test substance-related differences in survival or in clinical or ophthalmological signs were observed in any dose group. No adverse effects on overall body weight and nutritional parameters were observed in any dose group, although these parameters were transiently lower than control (statistically significant) in high-dose males (50 mg/kg/day) and females (500 mg/kg/day) over some weekly/biweekly intervals, particularly during the middle of the study. In 500 mg/kg/day females, the body weight over the first year of the study was statistically significantly lower than in control, although the difference was not statistically significant at the end of two years. Test substance-related, adverse or potentially adverse findings were observed in some clinical and anatomic pathology parameters in females at 500 mg/kg/day and in males at 50 mg/kg/day parameters, as discussed below.

Clinical pathology: The following statistically significant differences were considered adverse:

500 mg/kg/day (females only):

- ↓ red blood cell mass parameters (RBC, HGB, HCT, most time points), with ↑ MCV and reduced MCHC at the 12 month time point.
- ↑P (12 month), ↑ BUN (12 month), ↑A/G ratio (all time points), ↓globulin (all time points),

CONTAINS NO CBI

- urine: ↑urine volume and pH, ↓specific gravity (6, 12 month)

50 mg/kg/day:

- ↑ALP (male all time points), ↑ALT (male 12 month), ↑albumin (male all time points), ↑A/G ratio (male all time points)

Anatomic pathology: Increases in the following microscopic pathology findings were considered adverse:

500 mg/kg/day (females):

- Liver: adenoma, hypertrophy (also ↑ at one year), degeneration and necrosis; ↑ liver weight (at one and two year)
- Kidney: papillary necrosis and edema, chronic progressive nephropathy (also ↑ at one year), dilated tubules,
- Stomach: non-glandular mucosal hyperplasia
- Tongue: mucosal hyperplasia/inflammation

50 mg/kg/day:

- Liver: ↑ liver weight (males at one year only), hypertrophy, degeneration and necrosis (also ↑ in males at one year), basophilic foci; (males only except hypertrophy)
- In males, marginal increases were observed in the following:
  - Pancreas: acinar cell tumors; equivocal acinar cell hyperplasia (both sexes)
  - Testes: interstitial cell tumors and hyperplasia

All other statistically significant changes in clinical and anatomic pathology parameters were considered spurious and/or nonadverse based on absence of a dose response, the transient occurrence of the finding, the minimal nature or direction of the change, and/or the lack of correlative changes in related parameters. These included:

500 mg/kg/day (females only)

- ↑ Cl (6 month), ↑albumin (3 month), ↓bilirubin (all time points), ↓total protein (3 month), ↓ cholesterol (6 month), ↓APTT (12 month)
- Uterus: stromal polyps (not significant by Fisher's exact test and within historical control range)
- Lung: histiocytosis (within historical control range)
- Adrenal: benign pheochromocytoma (not significant by Fisher's exact test, within historical control range and not associated with correlative increase in hyperplasia)

50 mg/kg/day:

- ↓red blood cell mass parameters (RBC, HGB, HCT) at all time points in males; ↓RBC in females (12 month)
- ↓APTT (12 month; female))
- ↑ Ca (male 12 month), ↑P (male 3 month), ↑A/G ratio (female 3 and 6 month), ↓globulin (female 6 month)
- Urine: ↓urine volume (male 12 month) and pH (male 6 and 12 month)

1 mg/kg/day:

- ↓HGB (female 3 month), ↑ALP (male 12 month), ↑ BUN (male 12 month), ↑albumin (male 12 month), ↑A/G ratio (male all time points), ↑Cl (female 6 month)
- Urine: ↑urine volume (male 12 month) and pH (male 6 and 12 month; female 6 month)

0.1 mg/kg/day (males only):

- ↑P (3 month)
- Urine: ↓urine volume and ↓ pH (both 12 month)

Under the conditions of this study, the no-observed-adverse-effect level (NOAEL) was considered to be 1 mg/kg/day in male and female rats. Test substance-related neoplastic changes were observed at the high dose (500 mg/kg/day in females; 50 mg/kg/day in males) and included hepatocellular tumors in females and, in males, equivocal increases in pancreatic acinar cell tumors and testicular interstitial cell tumors. These tumor findings are typical of those previously reported in rats following exposure to other PPARα agonists. Based on the high dose threshold for these tumor responses in this study, the lack of genotoxicity of the test material across a battery of *in vitro* and *in vivo* tests, and the known responses of the rat versus other species, including humans, to these PPARα-associated tumor responses, these tumor findings are not considered relevant for human risk assessment.

This information is submitted in accordance with current guidance issued by EPA indicating EPA's interpretation of Section 8(e) of the Toxic Substances Control Act or, where it is not clear that reporting criteria have been met, it is submitted as a precautionary measure and because it is information in which EPA may have an interest.

Sincerely,

S. Satheesh Anand, Ph.D., DABT
Senior Research Toxicologist

SSA/SAM: jhh
(302) 366-5314

Study Title

COMBINED CHRONIC TOXICITY/ONCOGENICITY STUDY 2-YEAR ORAL GAVAGE STUDY IN RATS

Laboratory Project ID:

Volume 1 of 13

NUMBER OF PAGES IN VOLUME: 233

TEST GUIDELINES:
- U.S. EPA Health Effects Test Guidelines OPPTS 870.4300 Combined Chronic Toxicity/Carcinogenicity (1998)
- OECD Guidelines for the Testing of Chemicals Section 4 (No. 453) Health Effects (2009)
- JMAFF Japan Agricultural Chemicals Regulation Law 12 Nousan No. 8147 (2000)
- EEC Methods for the Determination of Toxicity Method B.33 Combined Chronic/Carcinogenicity test, Directive 88/302/EC (1988)

AUTHOR:

STUDY COMPLETED ON: March 28, 2013

APPLICANT/SPONSOR:

PERFORMING LABORATORY:

WORK REQUEST NUMBER:

SERVICE CODE NUMBER:

STUDY NUMBER:

below. Deviations from the protocol that did not affect the quality or integrity of the study are presented in Appendix N. This report accurately reflects the raw data obtained during the performance of this study.

On Day 637, the technician performing the detailed clinical observations was not yet documented as proficient in this function. The training records for this technician indicated that they were introduced to the function, but were not signed off on the function. No trainer was logged in to the computer session with this technician. The technician became proficient in this function on the day of occurrence and was signed off. No errors resulted in this deviation and the technician was subsequently found to be proficient, therefore this does not impact the study outcome.

28-Mar-2013
Date

Date

Typed name of signer: _____

EXHIBIT U

National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

Evaluation of substances used in the GenX technology by Chemours, Dordrecht

RIVM Letter report 2016-0174
M. Beekman et al.

National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

Evaluation of substances used in the GenX technology by Chemours, Dordrecht

RIVM Letter report 2016-0174
M. Beekman et al.

Colophon

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P. Zweers(author), RIVM
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This investigation has been performed by order and for the account of Ministry of Infrastructure and Environment, within the framework of National Policy on Chemicals (M/260027/16)

This is a publication of:
National Institute for Public Health and the Environment
P.O. Box 1 | 3720 BA Bilthoven
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Synopsis

Evaluation of substances used in the GenX technology by Chemours, Dordrecht

Since 2012, Chemours (Dordrecht) is using the GenX technology to produce plastics (fluoropolymers). In this technology, the substances FRD-902, FRD-903 and E1 replace the controversial PFOA substances. No health risk is expected for people living in the vicinity of the plant due to the emissions of these substances.

This is the finding of the RIVM. Commissioned by the Ministry of Infrastructure and the Environment (IenM), it is investigated to what extent the three substances are harmful to people living near the factory. For this, the scientific literature and the information in the European chemicals legislation REACH are examined on the properties of the listed substances. In addition, based on both the maximum authorised quantity and the recorded emission data that Chemours has provided, it is calculated to what extent they are released.

FRD-903 is used to manufacture FRD-902. E1 is formed during the manufacturing process. FRD-903 and E1 are emitted to the air. Like PFOA, FRD-903, FRD-902 and E1 are perfluorinated hydrocarbons and poorly degradable in the environment. Also, FRD-902 and FRD-903 are causing similar harmful effects as PFOA (such as carcinogenic and effects on the liver). These substances are, however, less harmful to reproduction than PFOA; reproduction toxicity is the reason to regard PFOA as substance of very high concern. In contrast to PFOA, FRD-902 and FRD-903 seem not to bioaccumulate in humans.

A safe limit value for the general population is derived based on a worst-case scenario. The concentration FRD-903 in air stays below this limit value. For E1, information is missing to derive a limit value. Based on the limited available information, this substance is probably less harmful than PFOA.

Keywords: GenX, PFOA alternative, PBT assessment, risk assessment, REACH

4 Human health properties

The toxicological information as used in the present evaluation is mainly based on the data as summarised by the registrant within the REACH registration dossier. In addition, Chemours provided some of the study reports on request of the RIVM. Further, two publications are available on kinetics and chronic toxicity and carcinogenicity, respectively, reporting studies also present in the registration dossier. Detailed summaries of the individual studies are provided in Annex I.

4.1 Human health hazards FRD-902

FRD-902 is classified as follows by the registrant:

- Acute Tox. 4 H302: Harmful if swallowed
- Eye Damage 1 H318: Causes serious eye damage
- STOT RE 2 H373: May cause damage to organs <or state all organs affected, if known> through prolonged or repeated exposure <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>. Affected organs: Liver, Blood

Based on the data available in the registration dossier, the RIVM agrees with the classification as Acute Tox. 4; H302 and Eye Damage 1; H318. The classification with STOT RE 2 is based on the liver and red blood cell effects, as indicated by the affected organs in the available repeated dose toxicity studies. In table 4, a comparison is made of the effects at or around the guidance values for STOT RE 2 for the respective study duration with the effects which may support classification. Classification for STOT RE is based on a defined level of adverse effects occurring below specified dose levels depending on the study duration.

Table 4. Comparison of the effects at or around the guidance values for STOT RE 2.

Study	STOT RE 2 guidance value	Effects observed (dose in mg/kg bw/day)	RIVM remark	Reference [17]
Oral, 28-day rat Males: 0.3, 3 and 30 mg/kg bw/day Females: 3, 30 and 300 mg/kg bw/day	300 mg/kg bw/day	30 mg/kg bw/day males/300 mg/kg bw/day females: increased liver beta-oxidation activity, increased liver and kidney weights, minimal hepatocellular hypertrophy, changes in serum lipids and proteins, and minimal decreases in red cell mass parameters (<7.9%)	Effects which may require classification (almost no information on effect size) as STOT RE including single cell necrosis and changes in serum lipids and proteins were observed at dose levels clearly below (males) or at (females) the guidance value for STOT RE 2.	Exp supporting repeated dose toxicity: oral.001

[17] This table refers to the literature references as included in the REACH registration dossier. According to REACH, the reference details are considered confidential.

Study	STOT RE 2 guidance value	Effects observed (dose in mg/kg bw/day)	RIVM remark	Reference [17]
Oral, 90-day rat Males: 0.1, 10 and 100 mg/kg bw/day and females 10, 100 and 1000 mg/kg bw/day	100 mg/kg bw/day	100 mg/kg bw/day (males): red cell mass reduction (11-13%), decrease cholesterol (-31%), increased albumin (+12%) and A/G ratio (+35%), decreased globulin (-15%), increased liver weights and hypertrophy (males)(abs 59%, rel 67%, increased kidney weights (abs 11%, rel 16%) (females: rel 9.5%), no liver necrosis	The observed effects do not indicate a requirement for classification for STOT RE 2.	Exp supporting repeated dose toxicity: oral.002
Oral, 28-day mouse 0.1, 3 and 30 mg/kg bw/day	300 mg/kg bw/day	30 mg/kg bw/day: adverse effects including increased liver weights, hepatocellular hypertrophy, and changes in serum lipids and proteins, increased body weight, decreases in red cell mass (<10%), increased adrenal weight and adrenal cortical hypertrophy, hepatocellular single cell necrosis	Effects which may require classification (almost no information on effect size) as STOT RE including single cell necrosis and changes in serum lipids and proteins were observed at dose levels clearly below the guidance value for STOT RE 2.	Exp supporting repeated dose toxicity: oral.003
Oral, 7-day rat (screening study) 30, 300 and 1000 mg/kg bw/day	1000 mg/kg bw/day	1000 mg/kg bw/day: reduced body weight (males), reduced red cell mass parameters, increase reticulocytes and neutrophils (females), decreases in serum lipids, increased alanine aminotransferase (ALT), aspartate aminotransferase (AST), urea nitrogen (BUN), and Glucose; and decreased sorbitol dehydrogenase (SDH), creatinine, and calcium, increased liver weights, hepatocellular hypertrophy.	As there is almost no information on the effect size, it is difficult to assess the adversity of the observed effects.	Exp supporting repeated dose toxicity: oral.004
Oral, chronic rat Males: 0.1, 1 and 50 mg/kg bw/day Females: 1, 50 and 500 mg/kg bw/day	12.5 mg/kg bw/day	50 mg/kg bw/day: liver: focal cystic degeneration, focal necrosis, centrilobular necrosis, increase liver enzymes, increase in albumin (16%), increase A/G ratio, reduced red cell mass (males) (<10%), reduced red cell mass (females) (<6%), A/G ratio (females) 50 mg/kg bw/day: Mild focal necrosis and minimal focal cystic degeneration was also observed in some animals at the one-year interim section (guidance value 25 mg/kg bw/day).	Difficult to assess as the effects at 50 mg/kg bw/day warrant STOT RE classification but the dose is too high whereas at 1 mg/kg bw/day the effects do not warrant classification.	Exp Key repeated dose toxicity: oral.005
Oral, 7-day male mouse	1000 mg/kg	30 mg/kg bw/day: increased liver and body weight, minimal single	The observed effects do not warrant classification	Exp supporting

Study	STOT RE 2 guidance value	Effects observed (dose in mg/kg bw/day)	RIVM remark	Reference [17]
(screening study) 30 mg/kg bw/day	bw/day	cell necrosis, moderate hypertrophy and increase in mitotic figures	but the tested dose level is clearly below the guidance value for STOT RE 2.	repeated dose toxicity: oral.006
Oral, 90-day mouse 0.1, 0.5 and 5 mg/kg bw/day	100 mg/kg bw/day	5 mg/kg bw/day: liver single cell necrosis (minimal) and other minimal to mild effects	Effects which not require classification as STOT RE were observed at dose levels clearly below the guidance value for STOT RE 2.	Exp supporting repeated dose toxicity: oral.007

Overall, the requirement of STOT RE 2 is difficult to assess because the dose levels tested in mice, with effects that may or may not warrant classification, are clearly below the guidance values and this may be taken as an indication that STOT RE 2 is needed. The effects in the rat are borderline and sometimes difficult to assess due to the large steps in the dose levels.

The registrant does not classify FRD-902 as carcinogenic because the observed increase in liver tumours in females and increases in pancreas and Leydig cell tumours in male rats are not considered relevant to humans. RIVM agrees that there are some species differences with regard to the relevance of these typical tumours for peroxisome proliferators for humans. In line with RAC and IARC, we consider the level of evidence sufficient to show that these tumours are relevant for humans. However, as tumours were only observed in one species, classification as a category 2 carcinogen is justified (suspected human carcinogen).

The available in vitro (OECD TG 471, 476 and 473) and in vivo (OECD TG 474, 475 and 486) genetic toxicity and mutagenicity studies show that FRD-902 is not mutagenic. EFSA (2008) concluded that FRD-902 is non-genotoxic based on the same dataset.
The registrant proposes no classification for reproductive toxicity. In the developmental toxicity study in rats, the only effect on reproduction was early delivery of the offspring at 100 and 1000 mg/kg bw/day. However, the adversity of this effect is uncertain as the offspring was alive and there was no increase in resorptions. In addition, these reproductive effects were observed at dose levels also inducing maternal toxicity. Therefore, classification based on the early delivery is doubtful and in category 2 at most. Other effects include decreased foetal weights at 100 and 1000 mg/kg bw/day and increases in variations at 1000 mg/kg bw/day. These effects in the presence of maternal toxicity do not normally warrant classification.

In the modified one-generation study in mice, postnatal reduced body weight and body weight gain was observed at the highest dose level in the presence of maternal toxicity (liver effects). Secondary delays in development were observed based on time after birth but not based on body weight.

These effects, observed in presence of maternal toxicity, do not normally result in classification.

In Annex I an elaborated overview of the available human health data for FRD-902 is given.

4.2 Conclusion on CMR and STOT RE properties FRD-902

- Carcinogenic: As tumours were only observed in one species, classification as a category 2 carcinogen is justified.
- Mutagenic: The available in vitro and in vivo genetic toxicity and mutagenicity studies show that FRD-902 is not mutagenic.
- Reproductive toxicity: The limited effects observed in presence of maternal toxicity do not normally result in classification.
- STOT RE: The requirement of STOT RE 2 is difficult to assess due to dose levels tested in mice clearly below the guidance values, which may be taken as an indication that STOT RE 2 is needed. The effects in the rat are borderline and difficult to assess due to the large steps in the dose levels.

4.3 Comparison FRD-902 and APFO

As FRD-902 is used as a replacement of PFOA and its ammonium salt (APFO) for the production of Teflon, a comparison of the toxicological properties of both ammonium salts (FRD-902 and APFO) is considered relevant. An exact comparison is not possible due to differences in applied dose levels. The data in table 5 show that excretion of FRD-902 is much faster in all tested animals compared to APFO. However, comparable PPAR-α effects and tumour types were observed in the available sub-chronic and chronic studies at roughly comparable exposure levels. As comparable effects occurred at comparable external dose levels, but at lower FRD-902 internal concentrations, the interaction of FRD-902 with its toxicological target is probably stronger. Differences are observed in the type of developmental effect between both substances.

Table 5. Comparison of the toxicological properties of FRD-902 and APFO.

		FRD-902	APFO	References APFO
Study type	**Parameter**	**Result**	**Result**	
Kinetics	Half-life mouse	5.2 hours	17-19 days	Lau et al, 2007
	Half-life rat (male)	3.2 hours	4-6 days	Lau et al, 2007
	Half-life monkey (male)	2.3 hours	20.9 days	Butenhof et al, 2004
	Half-life human	unknown	1378 days	Olsen et al, 2007
Acute oral toxicity	LD50 rat	1750 mg/kg bw	250 – 500 mg/kg bw	RAC, 2011
Skin irritation	CLP classification	No classification	Inconclusive	RAC, 2011
Eye irritation	CLP classification	Category 1	Category 1	RAC, 2011

		FRD-902	APFO	References APFO
Study type	**Parameter**	**Result**	**Result**	
90-day study rat	Effects LOAEL	PPAR- α related effects	Liver hypertrophy	Zeilmaker, 2016
	NOAEL/LOAEL	0.1 / 10 mg/kg bw/day	0.06 / 0.64 mg/kg bw/day	Zeilmaker, 2016
Chronic study rat	Effects LOAEL	Increased A/G ratio PPAR-a related effects at higher dose levels	Body weight, liver changes	US-EPA, 2016
	NOAEL/LOAEL	0.1 / 1.0 mg/kg bw/day	1.3 / 14.2 – 16.1 mg/kg bw/day	US-EPA, 2016
Carcinogenicity	Type of tumours	Liver cell adenomas Leydig cell adenomas Pancreas acinar cell tumours	Liver cell adenomas Leydig cell adenomas Pancreas acinar cell adenomas	RAC, 2011
	LOAEL/NOAEL	50 / 1 mg/kg bw/day	15 / 1 mg/kg bw/day	RAC, 2011
Developmental toxicity rat	Type of effects	Early delivery	No developmental effects	RAC, 2011
	LOAEL/NOAEL	100 / 10 mg/kg bw/day	- / 150	RAC, 2011
Generation study mice	Type of effects	No reproductive or developmental effects	Resorptions, stillbirth, postnatal mortality, early preputial separation	RAC, 2011
	LOAEL/NOAEL	- / 5 mg/kg bw/day	1 / - mg/kg bw/day	RAC, 2011

In comparing the toxicity of both substances it is useful to view toxicity as being the result of toxicokinetics and toxicodynamics. As to toxicodynamics, as already stated, the data (in particular the chronic and semichronic studies) indicate that FRD-902 interacts more strongly with its toxicological target than does APFO. As to toxicokinetics, however, the available non-human data for FRD-902 indicate a more favourable profile compared to APFO. As concluded in the present report, human data on the bioaccumulation of FRD-902 are lacking. If human data would confirm that FRD-902 indeed is considerably less bioaccumulative than APFO, overall its long term toxicity for humans can be judged as being lower. It should be noted that for the developmental toxicity endpoint these considerations do not apply. For this endpoint the mouse studies show a clearly lower potency for FRD-902 than for APFO whereas in rats FRD-902 was somewhat more potent (induced early delivery in combination with maternal toxicity at a dose level where APFO induced no effect). Overall with a view to reproductive

toxicity the information on FRD-902 do not normally warrant classification (see sections 4.1 and 4.2), whereas APFO is classified as toxic for the reproduction (category 1B).

4.4 Human health hazards FRD-903

All available toxicological studies were performed with the ammonium salt (FRD-902). Read-across of the toxicological properties of the ammonium salt to the acid is considered justified for systemic effects as after dissolution and dissociation of the acid and the salt the absorption in the intestinal tract and the lungs and distribution over the body of the anion (2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoate) will be the same. However, local effects to the lung may differ between the two substances as acids normally have a higher irritating effect than neutral salts.

4.5 Human health hazards E1

Only limited toxicological information is available on E1, consisting of a number of study reports provided by Chemours and a summary of the EFSA evaluation of the mutagenicity. Chemours could provide not all studies as some studies contained information on several substances. These are available upon request after redaction to remove all other data. Study summaries of the provided study reports on E1 and further details on the read-across are included in Annex 2.

The available oral kinetic studies indicate low oral absorption of E1. The observed effects after inhalation exposure indicate effects on the central nervous system. This indicates that some absorption can occur via this route. The absence of mortality after high dermal exposure indicates low dermal uptake.

The available acute toxicity studies via the oral (>17000 mg/kg bw), dermal (> 37500 mg/kg bw) and inhalation route (>576000 ppm) show no mortality at high dose levels indicating low overall toxicity and no requirement for classification.

The only repeated dose study is limited to a 10-day inhalation exposure over a period of 12 days and was performed using only male animals. The results show low toxicity limited to CNS depression during exposure. A NOAEC of 25000 ppm was derived.
The available in vitro and in vivo studies show no evidence of a mutagenic potential of E1, as also concluded by EFSA. The Ames test was negative. However, due to the likely evaporation of E1 in the in vitro chromosomal aberration study and the possibly limited amount of E1 in the in vivo inhalation micronucleus test that reached the bone marrow as no change in the PCE/NCE ratio was observed, no conclusion on the mutagenic properties concerning chromosome aberrations can be drawn from these studies.

Read-across
Read-across from FRD-902 to E1 is not justified because of the differences in chemical-physical properties (solid versus liquid with high vapour pressure, acid or salt versus neutral, more lipophilic substance).

EXHIBIT V

E. I. du Pont de Nemours and Company
Washington Works
Mail: P.O. Box 1217
Washington, WV 26181-1217

April 12, 2013

CERTIFIED MAIL
7009 2820 0002 7576 9794

Scott Mandirola, Director
WV Dept. of Environmental Protection
Division of Water and Waste Management
601 57th Street, SE
Charleston, West Virginia 25304-2345

Dear Mr. Mandirola:

WASHINGTON WORKS - NPDES CONSENT ORDER #7418
ORDER OF COMPLIANCE ITEM 6

Please find enclosed the C3 Dimer/Acid daily monitoring logs for Outlets 102, 305 and 605. The results are required as an attachment to the monthly eDMR. However, the log attachments were inadvertently overlooked and not submitted to the agency as part of the eDMR for the months or February 2012 – February 2013.

If you have any questions or need additional information, please call me at 304-863-4271.

Sincerely,

David F. Altman
Sr. Environmental Control Consultant
Washington Works

AAC/sll
Enclosures

cc:
Mr. Yogesh Patel
WV Dept. of Environmental Protection
Division of Water and Waste Management
601 57th Street, SE
Charleston, West Virginia 25304-2345

E. I. du Pont de Nemours and Company
Shipping: 8480 DuPont Rd
Washington, WV 26181

EXHIBIT W

E. I. du Pont de Nemours and Company
Washington Works
Mail: P.O. Box 1217
Washington, WV 26181-1217

December 17, 2013

eDMR Attachment

Mr. Scott Mandirola, Director
WV Dept. of Environmental Protection
Division of Water and Waste Management
601 57th Street, SE
Charleston, WV 25304-2345

Dear Mr. Mandirola:

WASHINGTON WORKS - NPDES PERMIT WV0001279
MONTHLY MONITORING REPORT FOR NOVEMBER 2013

The monthly discharge monitoring report and attachments for November 2013 are enclosed.

The following information details four C3 Dimer Acid/Salt Maximum Daily exceedances and one C3 Dimer Acid/Salt Monthly Average exceedance during the month of November. (See Attachment 1 for additional details).

Date	Outlet	Parameter	Result	Permit Limit
November 7, 2013	002	C3 Dimer Acid/Salt	280 ug/L	122 ug/L
November 14, 2013	002	C3 Dimer Acid/Salt	140 ug/L	122 ug/L
November 21, 2013	002	C3 Dimer Acid/Salt	530 ug/L	122 ug/L
November 26, 2013	002	C3 Dimer Acid/Salt	480 ug/L	122 ug/L
November 2013	002	C3 Dimer Acid/Salt	357.5 ug/L	77 ug/L

If you have any questions or concerns, please contact me at (304) 863-4271.

Sincerely,

David F. Altman
Sr. Environmental Control Consultant
DuPont Washington Works

DFA/sll
Enclosures

cc: Ms. Cindy Musser, Field Supervisor
WV-DEP, Environmental Enforcement
2311 Ohio Avenue
Parkersburg, WV 26101

Ms. Norma Green, 3WP31
U. S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103-2029

E. I. du Pont de Nemours and Company
Shipping: 8480 DuPont Rd
Washington, WV 26181

Attachment No. 1

Washington Works NPDES Permit WV0001279
Exceedance
November 2013

Date	Outlet No.	Parameter	Result	Permit Limitation	Remarks
11/7/2013 11/14/2013 11/21/2013 11/26/2013	002	C3 Dimer Acid/Salt Maximum Daily Limit	280 ug/L 140 ug/L 530 ug/L 480 ug/L	122 ug/L	Field investigation found pinhole leaks in 2 heat exchangers used in the GX902 recovery process allowing product to reach the cooling water side. The root cause is related to high manganese in the cooling water combined with the waste products of biologic contamination. This lead to localized corrosion of the stainless steel exchangers. To prevent reoccurrence additional preventative maintenance activities are being specified for the heat exchangers in the recovery process. On plant sampling and analytical capabilities are being upgraded to be able to detect this type of leak source.
11/2013	002	C3 Dimer Acid/Salt Monthly Average	357.5 ug/L	77 ug/L	See above.